

## CLAIMS

We claim:

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1. Apparatus to adapt a common telephone for operation as a speakerphone, comprising:
- a loudspeaker;
  - a microphone;
  - an audio module adapted for removable interfacing to a handset jack of a base unit of a telephone.
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2. The apparatus to adapt a common telephone for operation as a speakerphone according to claim 1, further comprising:
- a power supply.
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3. The apparatus to adapt a common telephone for operation as a speakerphone according to claim 2, wherein:
- said power supply is adapted to include a battery.
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4. The apparatus to adapt a common telephone for operation as a speakerphone according to claim 1, wherein:
- said apparatus is adapted to be operated in a half-duplex mode.
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5. The apparatus to adapt a common telephone for operation as a speakerphone according to claim 1, wherein:
- said apparatus is adapted to operate in a full-duplex mode.

6. The apparatus to adapt a common telephone for operation as a speakerphone according to claim 5, further comprising:  
an audio echo canceler.

5 7. The apparatus to adapt a common telephone for operation as a speakerphone according to claim 6, wherein:  
said audio echo canceler is an algorithm included in a digital signal processor.

10 8. The apparatus to adapt a common telephone for operation as a speakerphone according to claim 7, wherein said digital signal processor further includes:  
a hybrid echo canceler.

15 9. The apparatus to adapt a common telephone for operation as a speakerphone according to claim 1, wherein said audio module comprises:

20 a first codec for converting a signal to and from said handset jack of said base unit of said telephone between analog and digital signals;

an echo canceler; and

a second codec for converting a signal to said loudspeaker and a signal from said microphone into respective analog and digital signals.

25 10. The apparatus to adapt a common telephone for operation as a speakerphone according to claim 9, wherein said echo canceler comprises:

30 an audio echo canceler.

11. The apparatus to adapt a common telephone for operation as a speakerphone according to claim 10, wherein said echo canceler further comprises:

a hybrid echo canceler.

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12. The apparatus to adapt a common telephone for operation as a speakerphone according to claim 1, wherein:

said audio module is adapted and arranged for direct connection to said base unit of said telephone without use of a telephone line interface.

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13. The apparatus to adapt a common telephone for operation as a speakerphone according to claim 1, further comprising:

a telephone line interface.

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14. The apparatus to adapt a common telephone for operation as a speakerphone according to claim 1, further comprising:

a switch;

said switch having a first position which interconnects said handset to said handset jack of said telephone; and

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said switch having a second position which interconnects said audio module to said handset jack of said telephone.

15. The apparatus to adapt a common telephone for operation as a speakerphone according to claim 1, further comprising:

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a voice pager.

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16. A method of converting a common telephone into a speakerphone, comprising:

removing a handset connection between a handset and a base of a telephone; and

5 temporarily connecting a loudspeaker and a microphone to said handset connection on said base.

17. The method of converting a common telephone into a speakerphone according to claim 16, further comprising:

10 amplifying an output of said handset connection on said base.

18. The method of converting a common telephone into a speakerphone according to claim 17, wherein:

15 said amplifying is powered by battery.

19. The method of converting a common telephone into a speakerphone according to claim 16, further comprising:

20 disconnecting said loudspeaker and said microphone from said handset connection on said base; and  
restoring said handset connection between said handset and said base of telephone.

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25 20. Apparatus for converting a common telephone into a speakerphone, comprising:

means for removing a handset connection between a handset and a base of said telephone; and

means for temporarily connecting a loudspeaker and a microphone to said handset connection on said base.

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21. The apparatus for converting a common telephone into a speakerphone according to claim 20, further comprising:

means for amplifying an output of said handset connection on said base.

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22. The apparatus for converting a common telephone into a speakerphone according to claim 21, wherein:

said means for amplifying is powered by battery.

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23. The apparatus for converting a common telephone into a speakerphone according to claim 20, further comprising:

means for disconnecting said loudspeaker and said microphone from said handset connection on said base; and

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means for restoring said handset connection between said handset and said base of said telephone.

24. A communication device, comprising:

a voice pager including a speaker;

a microphone;

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an external handset cord adapter; and

an audio echo canceler adapted for operation when said communication device is connected to a telephone through said external handset cord adapter;

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said communication device having a voice paging mode of operation and a speakerphone mode of operation.

25. The communication device according to claim 24,  
wherein:

said voice pager including said speaker is adapted for operation when said communication device is in said voice paging mode of operation; and

said microphone, said audio echo canceler, and said speaker of said voice pager are adapted for operation when said communication device is in said speakerphone mode of operation.

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